The concrete proposals that I now place before the Commission are that they should:

(a) use their plenary powers to validate the selection by Burkenroad (1939, *Bull. Bingham oceanogr. Coll.* **6** (6) : 17) of the ♂ specimen (carapace length 38 mm, total length 165 mm) numbered B.O.C. 237 (taken off Matanzas Inlet, Florida, on 2 April 1934, at 8–10 fathoms, with an ottertrawl, by Mr. M. B. Bishop) to be the neotype of *Cancer setiferus* Linnaeus, 1767;

(b) place the following names on the Official List of Species Group Names in Zoology:

(i) *setiferus* Linnaeus, 1767 (*Syst. Nat.* (ed. 12) **1** : 1054), as published in the combination *Cancer setiferus*, and as identified through the neotype selection validated under (a) above;

(ii) *schmitti* Burkenroad, 1936 (*Annaes Acad. Brasil. Sci.*, 7 (4) : 315) as published in the combination *Penaeus schmitti*.

OBJECTIONS TO THE PROPOSED VALIDATION UNDER PLENARY POWERS OF A NEOTYPE FOR *CANCER SETIFERUS* L. 1767 (CRUSTACEA DECAPODA).

By Gordon Gunter (*Gulf Coast Research Laboratory, Ocean Springs, Mississippi, U.S.A.*)

When Linnaeus (1767) described *Cancer setiferus* he referred to a colored figure of Seba (Vol. III, 1761) labeled "*Astacus fluviatilis, Americanus*," which has been accepted as the type ever since. Linnaeus also gave the habitat as "*in Indiis*" and it has always been accepted as the American Indies until quite recently, because of the reference to "*Americanus*."

After all these remarks pertain to a warm water marine shrimp. *Americanus* could apply to polar seas or the Rocky Mountains or the South American Cordilleras. Thus Linnaeus' *in Indiis* is a perfectly natural and reasonable restriction, which is extremely important, and not unimportant as Holthuis would have it. Contentions to the contrary are unreasonable, and they are suspect on the grounds that they are for the purpose of manipulating the Code for ulterior motives to bring about desired ends, as indicated below.

Linnaeus' name *Cancer setiferus* has been accepted traditionally as the original designation for the southern Atlantic white shrimp, and no other interpretation is reasonable. The subsequent publications, following his (1767) notice, are strong evidence that Linnaeus' original intent was recognized and followed. Linnaeus (1790, J. F. Gmelin ed.) listed *Cancer setiferus* from South America and India; Olivier (1811, *Encyclopédie Méthodique. Hist. Nat. Insectes*, **8** : 1–722. Paris) listed it from South America. The following authors listed *Penaeus setiferus* from various localities in South America and the West Indies: H. Milne Edwards (1837, *Hist. Nat. Crustacés, etc.*, **2** : 1–532, atlas, 1–32, pls. 1–42), de Saussure (1858, *Mémoire sur divers crustacés nouveaux du Mexique et des Antilles, etc.* **1** (1). Geneve et Bale), Heller (1865, *Reise der österreichischen Fregatte "Novara" um die Erde, etc.* Zoologischer Theil. Crustaceen. Penaeidae. **2** (3) : 121–123), Bate (1881, *Ann. Mag. Nat. Hist.*, ser. 5, **8** : 169–196), Rathbun (1897, *Ann. Inst. Jamaica*, **1** : 1900; *Proc. Washington Acad. Sci.*, **2** : 133–156).

Say (1817, *Jour. Acad. Nat. Sci. Philadelphia* **1** (6) : 235–353) made the first published reference to a penaeid shrimp from North America when he described the northern species of white shrimp as *Penaeus fluviatilis*. His description was valid and the name has not lapsed. Either H. Milne Edwards (1837) did not know of Say's description or he ignored it and stated that *P. setiferus*, of which he had specimens from the Island of Guadeloupe in the West Indies, was also found on the coast of Florida. The custom of referring to the North American white shrimp as *P. setiferus* seems to date from that time. Nevertheless, the name was applied to the West Indian or South American shrimp nine times up to 1900 and to the North American species only four times. The latter references are: DeKay (1844, *Zoology of New York, etc.*, Pt. VI, Crustacea. P. iv + 70. Albany), Gibbes (1850, *Proc. Am. Assoc. Advan. Sci.* **1** : 168–201), Stimpson (1871, *Ann. Lyceum Nat. Hist. New York*, **10** : 92–136) and Kingsley (1879, *Proc. Acad. Nat. Sci. Philadelphia* **30** : 329–330).

When Burkenroad (1936, *Ann. Acad. Brasil.* **8** : 315–318) showed that the northern and southern species were separate he apparently ignored the literature, or was not fully acquainted with it, and its clear indication that the name of the southern Atlantic white shrimp is *P. setiferus*. Thus he described the southern species as new under the name *Penaeus schmitti*. Under the Rules prevailing then and the present Code that name is only a synonym of *P. setiferus*.

Burkenroad's next action (1939, *Bull. Bingham Oceanogr. Coll.* **6** (6) : 1–62) was to raise questions about the locality designation of Linnaeus as the American West Indies, the first time in over 172 years that it had come up, and attempt to set up a neotype of *P. setiferus* from Matanzas Inlet on the north coast of east Florida. Had this been validated it would have had the effect of transferring the name *P. setiferus* to the northern white shrimp, saving the name *P. schmitt*, and posthumously overslaughing Thomas Say. However, no request for neotype validation was presented to the Commission and only now the Commission is being requested to take action under plenary powers.

I realize that it is quite the vogue to insinuate that the Father of Systematics did not know the east from the west and had very hazy geographic ideas. I do not accept these ideas quickly and always suspect that authors who make these remarks have some axe to grind. That question does not come up here, but instead, we are asked to believe that Linnaeus did not know the difference between the Indies and North America. The fact of the matter is that Linnaeus clearly indicated that *Penaeus setiferus* was a West Indian species, and a long list of following workers found the species there, where Linnaeus said it was to be found, and also in South America. Those details are set forth above.

On the other hand, the ideas of Burkenroad and Holthuis concerning the inadequacy of Linnaeus' locality are tenuous and imaginative and have no substance. Their arguments are based on the simple statement of Seba, "*Americanus*." When taken together the statements of Seba and Linnaeus are rather definite. I (Gunter, 1962a, *Gulf Research Reports* **1** (3) : 106–114, 118–121) stated that the Dutch had holdings in the West Indies and none in North America. Holthuis (1962, *Gulf Res. Reports* **1** (3) : 115–118) countered with the idea that Seba had contacts in Virginia: (In the present petition the remark has been modified, it appears, to the statement that Seba had " at least one in North America " of correspondents). However, Virginia is north of the range of penaeid shrimp except for strays. Furthermore, Virginia and the Carolinas were well enough known localities to be used by Linnaeus and Seba, as witnessed by the host of names *carolinus*, *virginica* and variations to be found on any list of North American fauna and flora. In fact, an examination of the fish names in the latest North American checklist (Jordan, Evermann and Clark, 1930, *Rep. U.S. Comm. Fisheries*, Part II, pp. 1–670) indicates that Linnaeus was more likely to use *virginica* for south Florida species than *indicus*.

Holthuis has also advanced the argument that a good part of Florida was considered to be the Indies in former days. Florida was Spanish territory in those days and Dutch collectors were rare there, if not entirely absent. Additionally, Dr. Thomas O'Grady pointed out to me that Seba made collecting voyages to the West Indies. Thus, the arguments about the indeterminancy of the combined locality statements of Seba and Linnaeus are sort of imaginative grabbing at straws.

Doctor Holthuis' request for a ruling under plenary powers should be rejected because:

(1) Burkenroad was not the " first revisor " in 1939 when he tried to set up a neotype; if he ever was first revisor in this case it was in 1936. He did not remain a first revisor indefinitely and his designation was made in a later publication (1939). Thus his neotype designation does not satisfy Article 75 (a) of the Code.

(2) Burkenroad's " neotype " lies outside of the range of the original species of that name, according to the clear indications of a long line of workers from Linnaeus down to modern times. Thus, his neotype designation does not satisfy the conditions of Article 75 (c)(5) of the Code. The burden of proof lies on Burkenroad and Holthuis to show that Matanzas Inlet, Florida lies within the range of *Cancer setiferus*. No proofs except some doubtful hypotheses have been forthcoming.

(3) Burkenroad's neotype designation does not satisfy the " exceptional circumstances " condition of Article 75 (a) of the Code. No " complex zoological problem, such as the confused or doubtful identities of closely similar species " is involved. The two species of Atlantic American white shrimp are disjunct in distribution and there is no question concerning their distinction. The only " exceptional circumstances " in Burkenroad's neotype designation are the facts that it does not conform to the Articles of the Code in three important particulars, and its validation would have the effect of rescuing his synonym (*Penaeus schmitti*) and making it the proper name for the southern white shrimp.

(4) This is a trivial question concerning only one species, or at the most two. The Commission should not be asked to act on such matters for as a precedent it opens the door to innumerable others concerning the American species of Linnaeus.

(5) Taxonomic workers have many obligations. Among them is the obligation to give just credit to previous workers. Thomas Say first mentioned and described the North American white shrimp and he deserves vindication.

(6) The Commission should not be called upon to rectify the simple mistake of a worker who described an animal previously described, through inattention to the literature, as I have pointed out (Gunter, 1962, *Proc. Gulf and Caribbean Fish. Inst.* 15th Ann. Sess. pp. 103–110), or possibly due to a cavalier attitude, which apparently comes to people who assume a proprietory air after working for a while on restricted groups of animals.

Some General Remarks

The argument between Doctor Holthuis and me derives, I believe, from basic attitudes toward the Code rather than a mere consideration of the proper names of two shrimp species.

Savory (1962, *Naming the Living World.* English Universities Press. xiii + 128 pp. London) has pointed out that biologists may be divided into three groups on the basis of their attitudes towards the International Codes. One group, mostly non-specialists, looks with a jaundiced eye upon the whole procedure and makes little attempt to follow taxonomic rules. A second group follows the rules generally, but not always. A third group believes in rigid application of the rules in all circumstances. Actually there is a fourth group of competent taxonomists who yearn for a new system entirely, and who have proposed a sort of Dewey Decimal System and more recently a uninominal system (Michener, 1963, *Systematic Zoology* **12** (4) : 151–172).

Taxonomists can do nothing about the first group except teach them a little bit from time to time.

As I pointed out before (Gunter, 1963, *Bull. zool. Nomenclature* **20** (3) : 174) Holthuis used the uniform root *penaeus* several years ago for several penaeid shrimp, incorrectly under the rules, and Boschi (1963, *Bol. Instit. Biol. Marina* (3) : 1–39) has followed him, apparently. At present Holthuis has a petition before the International Commission for uniformity in these names, which I supported. But this is after the fact, so to speak, and the papers of Holthuis and Boschi contain erroneous names under the Code, which Holthuis certainly must have recognized before they were printed. Thus, I believe that Doctor Holthuis belongs to the second group of taxonomists, who follow the Code when they wish. The trouble with that attitude is that what the taxonomist does is determined by judgment, rather than by the Code, and the judgments of men differ. I do not sympathize with Holthuis' attitude and I belong to the third group of taxonomists which believes that the Code should be adhered to strictly; it is improving all the time and any step away from it is a much greater move towards chaos than the small inequities we find under it. The Code, like the law, is for everybody and any violation undermines it.

By Robert M. Ingle (*Florida State Board of Conservation Marine Laboratory, St. Petersburg, Florida*)

I have followed the arguments about the proper name of the North American white shrimp (Gunter, 1962, *Gulf Research Reports* **1** (3) : 107–114, 118–121; Holthuis, 1962, *Gulf Research Reports* **1** (3) : 115–118; and Gunter, 1962, *Proc. Gulf and Caribbean Fisheries Institute*, 15th Ann. Session, November, 1962, pp. 103–110) with considerable interest. It is apparent to me that Gunter's contentions are correct and the proper name of the North American white shrimp is *Penaeus fluviatilis*. We intend to use this name in works emanating from our Laboratory.

We work with commercial shrimp on both Atlantic and Gulf coasts of Florida and we are not at all impressed with the overturn of shrimp names as suggested by Holthuis (1962, *Gulf Research Reports* **1** (3) : 115–118) and in his present petition. The commercial shrimpers do not bother with the scientific names of shrimps and they are known by the vernacular names of whites, pinks, and browns. The suggestion of Holthuis in the above petition is not proper or correct with regard to the use of the commercial shrimp names.

By L. B. Holthuis (*Rijksmuseum van Natuurlijke Historie, Leiden, The Netherlands*)

Though I realize that arguments in a nomenclatural dispute can be continued ad infinitum, I should like to give you my reactions to Dr. Gunter's objection to my proposal concerning *Cancer setiferus* L.

1. As to the type locality of *Cancer setiferus*, this is per definition the locality where the type specimen, i.e. Seba's specimen, was collected. Of this locality we do not know anything in print or otherwise. It has been sufficiently shown that (a) Seba got material from all over the world, (b) the type specimen is no longer extant, and (c) the indications published by Seba are not sufficient to prove whether his specimen belonged to the northern or southern form. Until 1939, when Burkenroad designated a neotype, no restriction of the type locality has ever been published; the mention of localities for the species by later authors, like Linnaeus, Gmelin, H. Milne Edwards, etc. do not constitute type locality restrictions. Therefore I cannot see how Burkenroad's neotype selection can be incorrect under the Code. In my personal opinion, there is no need for an action by the Commission under their plenary powers, and I only asked for it in order to put those minds at rest who could not be convinced that Burkenroad's action is valid. Actually, as I see it, the name *setiferus* can only be used in the sense suggested by Dr. Gunter under a suspension of the Rules by the plenary powers of the Commission. I do not deny the possibility and perhaps even the greater probability that Seba's specimen belongs to the southern form, but its exact provenance (otherwise than that it is American) cannot be proved and therefore Burkenroad's neotype selection from a technical nomenclatural viewpoint is a valid one.

2. As to usage, Dr. Gunter stated that before 1900 the name *setiferus* was applied nine times to the southern form and four times to the northern. The nine times evidently are the records by Linnaeus (1767), Gmelin (1790), Olivier (1811), H. Milne Edwards (1837), de Saussure (1858), Heller (1865), Bate (1881), and M. J. Rathbun (1897, 1900). The first three authors all base their record on Seba's specimen as do also the authors Houttuyn (1769, *Nat. Hist.* **13** : 434), Statius Müller (1775, *Natursyst.* **5** : 1133),

Herbst (1793, *Vers. Naturgesch. Krabben Krebse* **3** : 106), and Olivier (1791, *Encycl. méth. Hist. nat.* **6** : 343), who are not mentioned by Dr. Gunter. Their locality indications are various like America, South America, India, West Indies. Perhaps there are more old handbooks in which Linnaeus is cited, and which thus could be added to Dr. Gunter's list. As far as the other authors cited by Dr. Gunter are concerned, H. Milne Edwards (1837) gave us the only locality for the species " L'embouchure des fleuves de la Floride", which is definitely northern. Dr. Gunter evidently included Milne Edwards in his list because Bate (1881) saw in the collection of the Paris Museum what he supposed to be H. Milne Edwards's specimen of this species labelled Guadeloupe. There are a few more authors, who before 1900 reported the species from S. America or the West Indies: Von Martens (1872, *Arch. Naturgesch.* **38** (1) : 141, 142; 1876, *Preuss. Exped. Ost.-Asien, Zool.* **1** : 38), Sharp (1893, *Proc. Acad. nat. Sci. Phila.*, **1893** : 126), Von Ihering (1897, *Rev. Mis. Paulista* **2** : 156), Doflein (1900, *S. B. Bayer. Akad. Wiss.* **30** : 126). This would make a total of 17 records (18 if H. Milne Edwards is included) 7 of which are based on Seba's animal of which the southern provenance is not certain.

The four records of the northern form published before 1900 referred to by Dr. Gunter are: De Kay (1844), Gibbes (1850), Stimpson (1871), and Kingsley (1879). However, Dr. Gunter forgot to include H. Milne Edwards (1837) and Bate (1881) who reported the species from Florida and De Saussure (1858), who mentioned it from Mexico, though these authors were included among those reporting the southern form; Bate and De Saussure actually dealt with both species. Other authors mentioning the northern form not cited by Dr. Gunter are: Gibbes (1848, *Tuomey's Rep. Geol. S. Carolina*, App. : 294), Kingsley (1878, *Bull. Essex Inst.* **10** : 53; 1899, *Amer. Nat.* **33** : 719), Howard (1883, *South Carolina* : 294), R. Rathbun (1883, *Bull. U.S. Fish Comm.* **2** : 140; 1844, in : G. Brown Goode, *Fisher. Fishery Industry U.S.* **1** : 821), Herrick (1887, *Mem. Denison sci. Ass.* **1** (1) : 46), Evermann (1892, *Bull. U.S. Fish Comm.* **11** : 90), Smith (1892, *Bull. U.S. Fish Comm.* **11** : 273), Collins & Smith (1892, *Bull. U.S. Fish Comm.* **11** : 102), Sharp (1893, *Proc. Acad. nat. Sci. Phila.*, 1893 : 126), Doflein (1900, *S.B. Bayer. Akad. Wiss.* **30** : 126). My count here comes up to 19, while probably more uses can be found in fishery literature, with which I am not too well acquainted. The many late records of the species in the American fishery literature coincide with the increasing importance of the shrimp industry in the United States at the end of the last century and throughout the present (cf. Johnson & Lindner, 1934, *Invest. Rep. U.S. Bur. Fish.* **21**), which industry grew more and more rapidly after 1900 (producing 7·4 million pounds in 1897, its production was up to 96 million pounds in 1934). Therefore it is rather misleading to take only the references from before 1900. According to my bibliography after 1900 the name *setiferus* has been used for far more than 100 times for the northern form and less than 20 times for the southern. As to the name *fluviatilis*, which is proposed by Dr. Gunter to replace the widely used name *setiferus* for the northern species, this has, according to my notes, not been used by any author in the period between its original publication by Say in 1818 and its re-introduction by Dr. Gunter in 1962.

In my opinion there is therefore no good reason for the Commission to undertake any actions for assigning the name *setiferus* to the southern form on the basis of usage; on the contrary, stability would be furthered by keeping to the Rules and thus by accepting Burkenroad's neotype selection.

3. Say in his description of *Penaeus fluviatilis* refers to " Astacus fluviatilis Americanus " of Seba and even borrowed Seba's first adjective for the specific name of his new species. Evidently, Say was not aware that Linnaeus had already given a name to the species, otherwise he might have adopted the name *setiferus* himself. In fact, by selecting Seba's specimen as the lectotype of *Penaeus fluviatilis* Say (a perfectly legal action as no lectotype has so far been selected for Say's species) *Penaeus fluviatilis* Say, 1818, would become an objective junior synonym of *Cancer setiferus* L., 1767. In case the Commission should adopt my proposal concerning the name *Cancer setiferus*, I definitely make this lectotype selection, then at the same time requesting the Commission to place the name *fluviatilis* Say, 1818, on the Official Index of Rejected and

Invalid Specific Names in Zoology. In case Dr. Gunter's ideas are validated it is necessary to select one of Say's own specimens (if still extant) as the lectotype of his species.

4. That Linnaeus's indication " '*in Indiis*' . . . has always been accepted as the American Indies until quite recently " is not quite correct. It actually means the two (i.e. East and West) Indies as can be seen by the fact that Linnaeus himself (1758, *Syst. Nat.* (ed. 10) 1 : 626) under *Cancer vocans* used the term " *in Indiis* " for a species of which he cited references by Catesby from the Bahama Islands and Rumphius from the Moluccas. Gmelin (1790) changed Linnaeus's term " in Indiis " for *Cancer setiferus* to " in America australi & India."

5. A neotype selection has not to be validated by the Commission, so that Burkenroad's action in establishing a neotype without consulting the Commission is not a violation of the Code.

6. The fact that Seba had a contact in Virginia does not necessarily mean that all the material that he obtained from that contact person had to come from Virginia. Say in his original description of *Penaeus fluviatilis* remarked that the species was (rarely) brought to the Philadelphia market, still farther north of the usual range of the species.

7. The information that Seba actually visited the West Indies is entirely new to me. Dr. H. Engel, director of the Zoological Museum at Amsterdam, who is the leading authority on Seba, and has spent a lifetime in collecting information on this interesting Amsterdam apothecary by consulting Dutch and other archives, quite positively informed me that to his knowledge there is not a single indication showing that Seba ever made a voyage to the West Indies. Seba was a burgher of substance, who acquired his collections by buying his specimens (mostly from sailors), by exchange and correspondence.

8. As to Dr. Gunter's points 1 to 6 I may remark the following:

(1) Burkenroad's 1939 paper was indeed a revisionary work. Nowhere in the Code is it stated that a neotype should be set up by a " first revisor," whatever that means in this case.

(2) As pointed out above, the type locality of the species is " America " and it has never been restricted before 1939. Burkenroad's restriction to Matanzas Inlet, Florida, therefore is perfectly legal.

(3) Two species had been confused for more than a century when Burkenroad in 1936 showed them to be distinct. To solve this " complex zoological problem " of " the confused or doubtful identity of closely similar species " Burkenroad's neotype selection was certainly justified.

(4) Since two species of great economic importance are concerned here, the nomenclature of the two forms is not a trivial matter.

(5) Thomas Say confused the two species as badly as did any of the other workers before 1936, unless one accepts Seba's specimen to be of northern origin.

9. Dr. Gunter accuses me that I belong to that group of taxonomists who only follow the Code when it is convenient to them. I can assure him that I have always tried to follow the Code strictly, and that any time that I found that a strict application of the Code would lead to undersirable situations, I have applied for a suspension of the Code. There would not have been any necessity for the, I am afraid rather many, applications that I submitted, if I really ignored the Code whenever it did not suit my purpose. Dr. Gunter further reproaches me that in the question of the uniform root penaeus of generic names of Penaeidae, I wilfully used, in a publication of 1959, this uniform root against the Code, while only " after the fact, so to speak " I submitted a proposal to validate my violation of the Code. Actually, however, the situation is such that in 1956 this question of a uniform root for the Penaeid generic names was already before the Commission and the late Mr. Francis Hemming approached me then for my view point on this matter, expressing himself a general preference for uniformity here. In the belief that a uniform root would have a good chance, and because at that moment there existed a diverse usage of this root, I adopted the uniform " penaeus " root in my paper, basing myself on Article 80 of the Code. I agree that somewhere in my paper I should have explained the situation and can only regret this oversight.